Chapter 1

Biology: Exploring Life

Chapter Objectives

Opening Essay

Explain why Madagascar has so many species of lemurs.

Themes in the Study of Biology

1.1 Describe seven properties common to all life.

1.2 Describe the levels of biological organization from molecules to the biosphere, noting the interrelationships between levels.

1.2 Define the concept of emergent properties and describe an example of it.

1.3 Explain why cells are a special level in biological organization. Compare prokaryotic and eukaryotic cells.

1.4 Compare the dynamics of nutrients and energy in an ecosystem.

Evolution, the Core Theme of Biology

1.5 Explain how DNA encodes a cell’s information.

1.6 Compare the three domains of life. Distinguish between the three multicellular kingdoms within Eukarya.

1.7 Describe the process and products of natural selection. Explain why individuals cannot evolve.

The Process of Science

1.8 Distinguish between quantitative and qualitative data. Compare the definitions and use of inductive and deductive reasoning in scientific investigations.

1.8 Distinguish between a scientific theory and a hypothesis.

1.8 Distinguish between the scientific definition and common use of the word   
theory.

1.9 Describe the structure of a controlled experiment and give an example.

Biology and Everyday Life

1.10 Compare the goals of science and technology. Explain why an understanding of science is essential to our lives.

1.11 Explain how evolution impacts the lives of all humans.